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The Effect of Occupational Safety and Health on Employee Performance at a Fuel Station in Metro

Panggih Pambudi[1*] Febriyanto[2] Nina Lelawati[3]
1,2,3 Department of Management, Faculty of Economics and Business, Universitas Muhammadiyah Metro, Indonesia
* Corresponding Author: panggih0209@gmail.com

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Abstract

Human resources, as the workforce, are inseparable from problems related to safety and health at work, and occupational accidents impose substantial human and economic costs worldwide and in Indonesia. This study examines whether occupational safety and health affect employee performance at Fuel Station 21 in Metro, a high-risk workplace handling flammable materials. A quantitative method was applied, with a saturated (census) sample of all 30 employees. Data were collected through library and field research using a questionnaire that was tested for validity and reliability, and were analysed using multiple linear regression in SPSS, preceded by classical assumption tests. The results show that occupational safety and occupational health each have a positive and significant partial effect on employee performance, and that the two variables jointly exert a significant simultaneous effect, explaining 67.6 percent of the variance in performance. Occupational safety recorded the larger standardised effect, indicating that safe working conditions are the more influential determinant of performance in this hazardous setting. A pre-survey nonetheless revealed gaps in safety facilities and health guarantees, and observation noted unsafe behaviours and health complaints. The study contributes to occupational-safety and human resource management research and recommends strengthening the use of personal protective equipment, supervision, and health support to sustain employee performance.

Keywords: *Occupational safety; Occupational health; Employee performance; Workplace safety; Human resource management*

1. Introduction

Human resources are an important and inseparable asset of any firm, and professional, competent, and diligent employees are key to achieving organisational goals, with employee performance serving as the principal measure of human resource management success (Sedarmayanti, 2016). However, the workforce is inseparable from problems of safety and health at work: according to the International Labour Organization, around two million people die each year worldwide from work-related causes, and large numbers experience occupational accidents and diseases. In Indonesia, recorded occupational accidents rose to 265,334 cases in 2022, a 13 percent increase over the previous year, underscoring the relevance of occupational safety and health to performance.

Fuel stations are public facilities provided to meet society's fuel needs and operate continuously in shifts. The sector carries a high risk of accidents because it involves flammable and potentially explosive materials, so employees require adequate protection from accidents and occupational diseases. Such protection is insufficient, however, unless employees themselves are aware of the importance of safety and health at work (Christian et al., 2009; Neal & Griffin, 2006).

A pre-survey at Fuel Station 21 in Metro indicated gaps in safety and health provision: only 40 percent of respondents confirmed the availability of safety and health facilities and only 30 percent confirmed receiving health guarantees. Observation found that some operators did not use personal protective equipment such as caps and masks, that some used mobile phones during refuelling despite prohibitions, and that customers sometimes failed to switch off engines, creating fire and explosion risks. Employees also reported health complaints such as dizziness, back pain, eye irritation, and nausea, associated with prolonged standing and exposure to organic solvents.

Monthly fuel sales at the station were unstable during 2023, ranging from a high of about 250,000 litres in September to a low of about 170,000 litres in May, suggesting that performance targets were not consistently met and that safety and health are important to operational continuity. Although the station has implemented an occupational safety and health management system in line with national labour law, the observed gaps motivate an empirical examination of how safety and health relate to performance (Hofmann et al., 2017; Zohar, 2010).

Accordingly, this study examines the effect of occupational safety and occupational health on employee performance at Fuel Station 21 in Metro. The study contributes to occupational-safety and human resource management research in high-risk service settings and provides practical recommendations. The objectives are to analyse the partial and simultaneous effects of occupational safety and health on performance.

2. Literature Review and Theoretical Framework

2.1 Theoretical Foundation

Occupational safety refers to the condition of being safe from suffering, damage, or loss at work, encompassing aspects of the work environment that can cause fire, electric shock, cuts, or other injuries (Noegroho, 2019). Safety climate and management practices are consistently associated with safety behaviour and outcomes, which in turn affect productivity and quality of work (Griffin & Neal, 2000; Mearns et al., 2003; Neal & Griffin, 2006). Occupational health is the set of practices and rules that protect the physical, mental, and social condition of workers from harm, enabling them to work optimally and productively (Kartikasari & Swasto, 2017).

Together, occupational safety and health constitute the human resource function concerned with protecting employees, and their effective management creates a safe, healthy workplace that reduces accidents and diseases and raises efficiency and performance (Hofmann et al., 2017). Employee performance, in turn, is the quality and quantity of work achieved by an employee in carrying out assigned responsibilities, and is shaped by ability, competence, and motivation as well as by working conditions (Diamantidis & Chatzoglou, 2019; Robbins & Judge, 2019).

2.2 Hypothesis Development

Drawing on safety research and human resource management theory, safe working conditions are expected to raise performance by reducing risk and increasing focus (Christian et al., 2009; Neal & Griffin, 2006), and good occupational health is expected to raise performance by maintaining the physical and mental capacity to work (Nahrgang et al., 2011). The hypotheses are therefore:

H1: Occupational safety has a positive and significant effect on employee performance.

H2: Occupational health has a positive and significant effect on employee performance.

H3: Occupational safety and occupational health jointly have a significant effect on employee performance.

3. Research Methodology

3.1 Research Design

This study employed a quantitative survey design to test the effects of occupational safety and occupational health on employee performance at Fuel Station 21 in Metro.

3.2 Data Collection

The population comprised all 30 employees of the station, and a saturated (census) sampling technique was applied so that the entire population served as respondents. Data were collected through library and field research using a questionnaire that was tested for validity and reliability prior to hypothesis testing.

3.3 Data Analysis

Data were analysed using multiple linear regression in SPSS 25, preceded by classical assumption tests of normality, linearity, and homogeneity. Hypothesis testing was conducted through the partial t-test, the simultaneous F-test, and the coefficient of determination.

4. Results and Discussion

4.1 Results

The pre-survey that motivated the study is summarised in Table 1, indicating gaps in the availability of safety and health facilities and in health guarantees.

Table 1. Pre-survey results on employees at Fuel Station 21

Statement	Yes (%)	No (%)
Safety and health facilities are available	40	60
Health guarantee is provided at work	30	70

Source: Pre-survey data, processed, 2026

The classical assumption tests, summarised in Table 2, confirmed that the model met the required conditions: the variables were normally distributed, the relationships were linear, and the variances were homogeneous.

Table 2. Classical assumption test results

Test	Significance	Conclusion
Normality (X1; X2; Y, K-S)	0.200; 0.101; 0.080	Normal
Linearity (deviation, X1)	0.353	Linear
Linearity (deviation, X2)	0.418	Linear
Homogeneity (X1; X2)	0.126; 0.300	Homogeneous

Source: Primary data processed with SPSS 25, 2026

The multiple linear regression results are presented in Table 3. The estimated equation is Y = 9.225 + 0.522X1 + 0.357X2. Both predictors recorded significance values below 0.05, so H1 and H2 are supported, with occupational safety exhibiting the larger standardised coefficient.

Table 3. Multiple linear regression coefficients

Model	B	Std. Error	Beta	t / Sig.
(Constant)	9.225	9.975	-	0.925 / 0.363
Occupational safety (X1)	0.522	0.130	0.514	4.007 / 0.000
Occupational health (X2)	0.357	0.107	0.428	3.339 / 0.002

Source: Primary data processed with SPSS 25, 2026. Dependent variable: employee performance.

The simultaneous F-test, summarised in Table 4, produced a value of 28.151 with a significance of 0.000, exceeding the critical F-value of 4.20, confirming that the two variables jointly affect performance, so H3 is supported. The coefficient of determination is 0.676, indicating that occupational safety and health together explain 67.6 percent of the variance in performance, while the remaining 32.4 percent is attributable to other factors.

Table 4. Simultaneous test and coefficient of determination

Statistic	Value	Conclusion
F-value (Sig.)	28.151 (0.000)	Significant
R	0.822	-
R-squared	0.676	67.6% explained
Adjusted R-squared	0.652	-

Source: Primary data processed with SPSS 25, 2026

4.2 Discussion

The significant effect of occupational safety on performance supports H1 and, with the larger standardised coefficient, identifies safe working conditions as the more influential determinant of performance in this hazardous setting. This finding is consistent with meta-analytic evidence that safety climate and behaviour are positively related to performance outcomes (Christian et al., 2009; Neal & Griffin, 2006). The observed gaps, such as the non-use of personal protective equipment and unsafe behaviours, therefore represent risks to both safety and performance that warrant stronger supervision.

The significant effect of occupational health supports H2 and indicates that protecting employees' physical and mental condition raises performance, consistent with evidence linking job resources and health to engagement and performance (Nahrgang et al., 2011). The health complaints reported, associated with prolonged standing and solvent exposure, signal a need for health support and ergonomic improvements. Jointly, the two variables explain more than two-thirds of the variance in performance, confirming that performance in a high-risk workplace is strongly shaped by safety and health management within a human resource framework (Hofmann et al., 2017). Theoretically, the study extends occupational-safety research to the fuel-retail setting, while practically it implies that strengthening protective equipment, supervision, and health support is required to sustain performance.

5. Conclusion

This study examined the effect of occupational safety and occupational health on employee performance at Fuel Station 21 in Metro. Occupational safety and occupational health each have a positive and significant partial effect on performance, and the two variables jointly have a significant effect, explaining 67.6 percent of the variance, with occupational safety as the more dominant determinant. These results indicate that safe and healthy working conditions are decisive for performance in a hazardous workplace.

The study recommends that the station strengthen attention to occupational safety by enforcing the use of personal protective equipment such as caps and masks and by improving supervision of safety rules, and to occupational health by supporting healthy nutrition, regular exercise, ergonomic equipment, and reduced solvent exposure. Future research should incorporate additional variables such as safety climate, motivation, and compensation, and extend the study to other fuel stations or larger samples to improve generalisability.

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